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RECENT LITERATURE.

Wolle's *Fresh-Water Algæ of the United States*.¹—In the two substantial volumes of this long-looked-for work we have brought together a great mass of useful knowledge, which will long be a monument to the industry and patience of the author. The labor involved in the preparation of the plates alone, with their multitudes of figures, is something enormous, and, when we remember that this work was all performed by the author himself, one cannot help admiring the spirit which prompted the solitary worker to undertake to give to American students the first manual of the fresh-water Algæ of the country. Hereafter the work will be much easier, and whatever defects or omissions are observed in the present book may be much more easily avoided or corrected in future publications. The book thus marks an important advance in this field of botanical science.

The author, in an introductory chapter of about half a dozen pages, discusses the polymorphism of the Algæ, and its bearing upon the system of classification. Many so-called genera and species are but stages in the life-history of higher forms, as has been made out by the researches of recent investigators, notably by Dr. Anton Hansgirg, of the Royal University of Prague. In summing up, our author says, "It is evident that, sooner or later, the whole system of classification must be changed. The present system is altogether too artificial, separating, as it does, many forms, not only into different genera, but into different families and orders, which are genetically connected. Our present knowledge is too imperfect for a complete arrangement. It is important to understand the life-history of not only a few, but of all, the generic forms."

The system of classification adopted is based upon that of Kirchner ("Krypt. Flora von Schlesien," 1878). The author further remarks, upon the system he adopts, that "many genera are still preserved which have literally no worth, but they serve for reference."

The Algæ treated in the book are arranged under three classes,—viz., Rhodophyceæ, Chlorophyceæ, and Cyanophyceæ. The further subdivisions are as shown in the following condensed tabular arrangement:

Class I.—RHODOPHYCEÆ.

Order I.—*Florideæ*. Families.—1. Lemnaceæ; 2. Porphyraceæ; 3. Batrachospermaceæ; 4. Hildebrandtiaceæ.

¹ "Fresh-Water Algæ of the United States" (exclusive of the Diatomaceæ); Complementary to Desmids of the United States; with two thousand three hundred illustrations, covering one hundred and fifty-one plates, a few colored, including nine additional plates of Desmids. By the Rev. Francis Wolle, member of the American Society of Microscopists. Bethlehem, Pa.: The Comenius Press, 1887. Vol. i., text pp. 364; vol. ii., plates Nos. LIV. to CCX. Price, \$10.00.

Class II.—CHLOROPHYCEÆ.

Order II.—*Confervoideæ*. Families.—5. Coleochætaceæ; 6. CEdogoniaceæ
7. Sphæropleaceæ; 8. Confervaceæ; 9. Pithophoraceæ.

Order III.—*Siphonææ*. Families.—10. Vaucheriaceæ; 11. Botrydiaceæ.

Order IV.—*Protococcoideæ*. Families.—12. Volvocaceæ; 13. Protococcaceæ;
14. Palmellaceæ; 15. Chytridiææ.

Order V.—*Zygosporeæ*. Families.—16. Conjugatæ; 17. Desmidiææ.

Class III.—CYANOPHYCEÆ.

Order VI.—*Schizosporeæ*.—Families.—18. Nostocaceæ; 19. Chroococcaceæ.

It will be observed that the “families” are groups so named in the German sense, and are really co-ordinate with the Benthamian “orders” of ordinary phanerogamic botany. The six “orders” of the book are, perhaps, equivalent to the “Cohorts” of the higher plants as arranged by Bentham and Hooker. This want of co-ordination may confuse some of our American students whose ideas of botanical orders are derived from the common manuals of the flowering plants, in which “order” and “family” are synonymous.

The descriptions are good, both for genera and species. Analytical arrangements of the species are given in many instances where the genera are large. Measurements are freely resorted to in order to give an idea of the size of filaments, cells, spores, etc. The micromillimetre is used exclusively as the unit of measurement. The plates, while not artistic, are, apparently, quite accurate. Some of them are a little too diagrammatic, as, for example, some of the *Spirogyræ*. The *CEdogonia* are very well drawn, and are much better than in Cooke’s “British Fresh-Water Algæ.”

The author deserves the gratitude of American botanists for bringing out this book and placing it within the reach of all, the price being scarcely half of that of the corresponding English work referred to above.—*Charles E. Bessey*.

GENERAL NOTES.

GEOLOGY AND PALÆONTOLOGY.

Scott and Osborn on White River Mammalia.¹—In this brochure of twenty pages the distinguished Professors Scott and Osborn, of Princeton, have given a preliminary account of their studies of fossils from the classic bad lands of the adjacent regions of Dakota and Nebraska collected by Mr. Samuel Garman for Professor Agassiz’s museum in Cambridge. The most important results are as follows: 1. Determination of the foot-

¹ “Preliminary Account of the Fossil Mammals from the White River Formation contained in the Museum of Comparative Zoölogy, Cambridge, Mass.” Bulletin of the Museum, vol. xiii. No. 5, August, 1887.